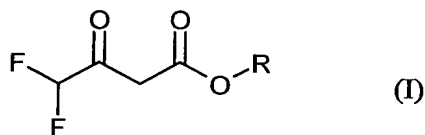


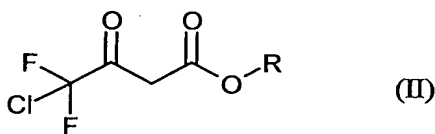
**Patent claims**

1. Method for the preparation of alkyl esters of 4,4-difluoroacetoacetic acid of structure (I)

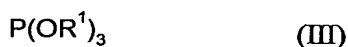


- 5 in which R stands for alkyl,  
characterised in that

in a first step alkyl esters 4-chloro-4,4-difluoroacetoacetic acid of structure (II)



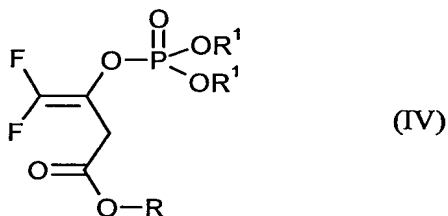
- 10 in which R has the meaning described above  
are reacted with trialkylphosphites of structure (III)



in which

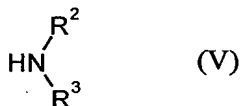
- 15  $\text{R}^1$  stands for  $\text{C}_1\text{-C}_4\text{-alkyl}$ , whereby the residue  $\text{R}^1$  can in each case be the same or  
different,

the alkylphosphonates of structure (IV) thus obtained



in which R and  $\text{R}^1$  have the meanings described above

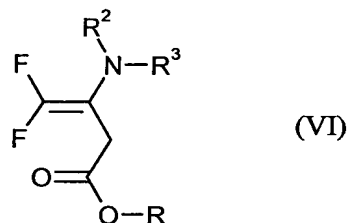
- 20 are reacted in a second step with an amine of structure (V)



in which

- 25  $\text{R}^2$  and  $\text{R}^3$  independently of each other stand for hydrogen or  $\text{C}_1\text{-C}_8\text{-alkyl}$  or together for  
 $-\text{CH}_2\text{-CH}_2\text{-O-CH}_2\text{-CH}_2-$ ,  $-\text{CH}_2\text{-CH}_2\text{-S-CH}_2\text{-CH}_2-$  or  $-\text{CH}_2\text{-CH}_2\text{-N(R}^4\text{)-CH}_2\text{-CH}_2-$ ,

$R^4$  stands for hydrogen or  $C_1$ - $C_8$ -alkyl,  
optionally in the presence of a diluent  
and the enamines of structure (VI) thus obtained

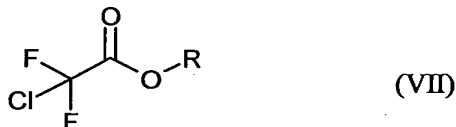


5 in which R,  $R^2$  and  $R^3$  have the meanings described above,  
are hydrolysed in a third step in the presence of an acid.

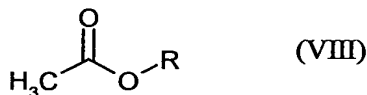
2. Method as described in claim 1 characterised in that the alkyl 4-chloro-4,4-difluoroacet-  
oacetates of structure (II) used in the first step as starting materials are prepared in that

10

alkyl chlorodifluoroacetates of structure (VII)



in which R has the above described meaning,  
are reacted with alkyl acetates of the structure (VIII)



15

in which R has the meaning described above,  
in the presence of a base and in the presence of a diluent.

3. Method as described in claim 1 or 2 characterised in that compounds of structure (II) as  
20 described in claim 1 are used in which R stands for  $C_1$ - $C_8$ -alkyl.

4. Method as described in claim 1 or 2 characterised in that compounds of structure (II) as  
described in claim 1 are used in which R stands for  $C_1$ - $C_8$ -alkyl.

25 5. Method as described in claim 1 or 2 characterised in that compounds of structure (II) as  
described in claim 1 are used in which R stands for methyl, ethyl, n-, iso-propyl, n-, iso-, sec-,  
tert-butyl and

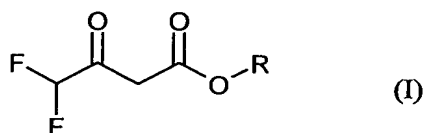
compounds of structure (III) as described in claim 1 are used, in which R<sup>1</sup> stands for methyl, ethyl, n-, iso-propyl, n-, iso-, sec-, tert-butyl and

Compounds of structure (V) as described in claim 1 are used, in which R<sup>2</sup> and R<sup>3</sup> independently of each other stand for hydrogen, methyl, ethyl, n-, iso-propyl, n-, iso-, sec-, tert-butyl or together stand for -CH<sub>2</sub>-CH<sub>2</sub>-O-CH<sub>2</sub>-CH<sub>2</sub>-.

6. Methods as described in claim 1, 2, 3, 4 or 5 characterised in that the first step is carried out without diluent.

7. Methods as described in claim 1, 2, 3, 4, 5 or 6 characterised in that the hydrolysis in the third step is carried out in the presence of sulphuric acid, phosphoric acid or hydrochloric acid, which in each case may be optionally diluted with water.

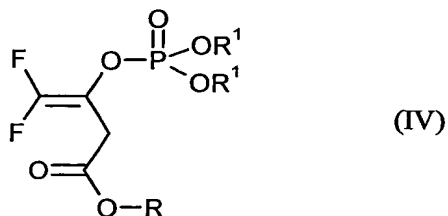
8. Use of alkyl 4,4-difluoroacetoacetates of structure (I)



in which R stands for alkyl,

for the preparation of difluoromethyl-substituted pyrazolylcarboxylic acid or thiazolylcarboxylic acid derivatives.

9. Alkyl phosphonates of the structure (IV)

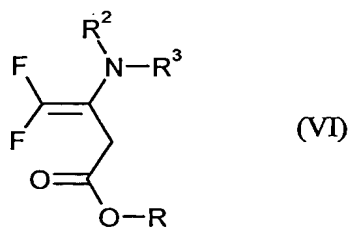


in which

R stands for alkyl,

R<sup>1</sup> stands for C<sub>1</sub>-C<sub>4</sub>-alkyl, whereby the residues R<sup>1</sup> can in each case be the same or different.

## 10. Enamines of the structure (VI)



in which

R stands for alkyl,

5 R<sup>2</sup> and R<sup>3</sup> independently of each other stand for hydrogen or C<sub>1</sub>-C<sub>8</sub>-alkyl

or together for -CH<sub>2</sub>-CH<sub>2</sub>-O-CH<sub>2</sub>-CH<sub>2</sub>-, -CH<sub>2</sub>-CH<sub>2</sub>-S-CH<sub>2</sub>-CH<sub>2</sub>- or -CH<sub>2</sub>-CH<sub>2</sub>-N(R<sup>4</sup>)-CH<sub>2</sub>-CH<sub>2</sub>-,

R<sup>4</sup> stands for hydrogen or C<sub>1</sub>-C<sub>8</sub>-alkyl.